



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,375	12/18/2001	Lawrence J. DaQuino	10010792-1	2452

7590 05/18/2007
Gordon Stewart
Agilent Technologies, Legal Department, DL429
Intellectual Property Administration
P.O. Box 7599
Loveland, CO 80537-0599

EXAMINER

LAM, ANN Y

ART UNIT	PAPER NUMBER
----------	--------------

1641

MAIL DATE	DELIVERY MODE
-----------	---------------

05/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/023,375

Applicant(s)

DAQUINO ET AL.

Examiner

Ann Y. Lam

Art Unit

1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 29-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 29-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

Claims 18-28 have been canceled.

Claims 1-17 and 29-41 are currently pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-17 and 29-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al, 5,939,206, in view of McDevitt et al., 6,713,298.

Chan et al. disclose the invention substantially as claimed. More specifically, as to claims 1, 10, 29 and 30, Chan et al. disclose a pulse jet printhead comprising:

(a) a multiple die printhead comprising:

(i) a single orifice plate (16, col. 3, line 46) comprising a plurality of orifices (32, see fig. 3);

(ii) a plurality of thermal printhead dies (26 and 44 and resistors 50, 52, etc., see fig. 3) each comprising a top surface (i.e., top surface of 26) and bottom surface (i.e., bottom surface of 44), wherein said top surface comprises a plurality of

resistors (50 and 52, col. 5, line 58) and is bonded together (col. 5, lines 6-13) to a surface of said orifice plate (see fig. 3, showing that top of 26 is bonded to bottom of 16), wherein said resistors are in operational alignment with said orifices to produce at least one firing chamber (see fig. 3, showing that resistors 50 and 52 are lined up with orifices 32), (it is noted that while Chan et al. do not utilize the term printhead die, elements (26, 44 and resistors, 50, 52, etc., are considered to be printhead dies because they comprise all the elements of printhead dies as described by Applicant in the application); and

(b) a volume of an aqueous fluid (i.e., ink, col. 6, line 9) in said at least one firing chamber.

However, Chan et al. do not teach that the fluid is a biopolymer. McDevitt et al. teach this limitation.

McDevitt et al. teach that an array of biopolymers such as DNA and proteins (col. 4, lines 41-44, and col. 5, lines 10-12, 48-50, and 55-59) can be applied onto a substrate through a dispense head that is made using technology essentially identical to that used in "ink-jet" printer heads (col. 101, lines 26-34.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a sample of DNA or proteins as the fluid in the Chan et al. printhead because McDevitt et al. teach that providing DNA or proteins in ink-jet printer head technology, such as that taught by Chan et al. (col. 1, line 65), provide the benefit of forming DNA or protein sensor arrays, as would be useful to the skilled artisan in the biotechnology art.

Thus, as to claims 6, 7, 9, 15, 16, 17 and 30, McDevitt et al. teach that the biopolymer is polypeptides or nucleic acids (col. 5, lines 55-58.)

As to the following claims, Chan et al. teach the limitations as follows.

As to claims 2-3, 11-12 and 31-32, the printhead comprises from 2 to about 10 printhead dies, or 2 to 5 printhead dies, (see fig. 3, showing that there is at least two resistors 50 and 52.) The portion of element 26 above each resistor is deemed to be a printhead die. Applicants' claim do not recite that each printhead die is separate from each other. (It is noted however that element (26) is disclosed as being discontinuous (col. 4.)

Claims 4, 13 and 33, Chan et al. do not specifically disclose that there are 3 printhead dies. However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. In this case, Chan et al. disclose the general conditions of the claims, and 3 printhead dies is within an optimum or workable range and thus its discovery involves only routine skill in the art under *In re Aller*.

As to claims 5, 14 and 34, each of the printhead dies is a thermal pulse jet printhead die (col. 6, line 4-10.)

As to claim 8, 10, 35, a fluid reservoir (see chamber in fig. 2, which leads to ink flow port 58, which leads to ink reservoir 59) in fluid communication with the firing chamber.

As to claim 36-41, the printhead dies (26 and 44 and resistors 50, 52, etc., see fig. 3) and the single orifice plate (16, col. 3, line 46) are bonded together (col. 5, lines 6-13.)

Moreover, as to claim 39-41, the multiple printhead dies are parallel to each other (see fig. 3).

Response to Arguments

Applicants' arguments filed February 28, 2007 have been fully considered but are moot in view of the new grounds of rejection.

Applicants' argument that the ink manifold opening does not line up with the resistors is persuasive. It is noted that Applicants do not actually recite that the resistors and the opening of the orifice plate line up, but rather recite that the resistors are in operational alignment with the orifices of the orifice plate. Thus, "operational alignment" is interpreted to mean that the elements are lined up (i.e., are positioned linearly with respect to each other), as this appears to be Applicants' intended meaning according to Applicants' response. The newly cited patent to Chan et al. however disclose this arrangement.

Conclusion

Art Unit: 1641

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Y. Lam whose telephone number is 571-272-0822. The examiner can normally be reached on Mon.-Fri. 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



5/10/07

ANNYEN LAM
PATENT EXAMINER